

CLAIMS

1 1. (currently amended) Circuitry comprising a filter having one or more filter sections,
2 wherein:
3 at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;
4 [[and]]
5 at least one of the gm cells can itself be configured to have substantially zero transconductance,
6 such that the at least one filter section will oscillate;
7 the at least one gm cell has switch circuitry connected to first and second input nodes of the at
8 least one gm cell;
9 the at least one gm cell is adapted to be configured to have non-zero transconductance by
10 selectively applying two different input signals to the first and second input nodes using the switch
11 circuitry; and
12 the at least one gm cell is adapted to be configured to have substantially zero transconductance
13 by selectively applying a single input signal to the first and second input nodes using the switch circuitry.

1 2. (original) The invention of claim 1, wherein the at least one filter section is adapted to
2 oscillate at a cutoff frequency of the filter section.

1 3. (currently amended) The invention of claim 1, wherein the at least one filter section has
2 an input node adapted to receive an input signal for the at least one filter section, an intermediate node,
3 and an output node adapted to present an output signal for the at least one filter section and further
4 comprises:

5 a first gm cell connected between the input node and the intermediate node;
6 a first capacitor connected between the intermediate node and a voltage reference;
7 a second gm cell connected between the intermediate node and the output node;
8 a second capacitor connected between the output node and the voltage reference;
9 a third gm cell connected at both ends to the intermediate node; and
10 a fourth gm cell connected between the output node and the intermediate node, wherein:
11 the at least one gm cell is the third gm cell; and
12 the third gm cell comprises a set of switches that enable the third gm cell to be
13 configured to have substantially zero transconductance, such that the at least one filter section will
14 oscillate.

1 4. (original) The invention of claim 3, wherein the voltage reference is ground.

1 5. (original) The invention of claim 1, wherein:
2 the at least one filter section is in a main signal path of the filter; and
3 the at least one filter section is adapted to be configured to oscillate in order to tune the at least
4 one filter section.

1 6. (original) The invention of claim 5, wherein each filter section in the main signal path of
2 the filter can be configured to oscillate in order to tune each filter section.

1 7. (previously presented) The invention of claim 1, wherein:
2 the one or more filter sections comprise one or more main-path filter sections and a non-main-
3 path filter section;
4 the filter comprises a main signal path having the one or more main-path filter sections;
5 the at least one filter section is the non-main-path filter section, which is not part of the main
6 signal path;

7 the non-main-path filter section is a replica of at least one main-path filter section in the main
8 signal path; and

9 the non-main-path filter section is adapted to be configured to oscillate in order to tune the at
10 least one main-path filter section in the main signal path.

1 8. (original) The invention of claim 1, wherein:

2 the at least one filter section comprises tuning circuitry adapted to tune the at least one filter
3 section; and

4 the tuning circuitry is adapted to store tuning control information for the at least one filter section
5 such that the at least one filter section can be tuned intermittently.

1 9. (previously presented) The invention of claim 8, wherein information based on the
2 tuning control information of the at least one filter section is used to tune one or more other filter
3 sections in the filter.

1 10. (original) The invention of claim 1, wherein the at least one filter section is adapted to
2 oscillate without relying on phase-locked loop circuitry.

1 11. (original) The invention of claim 1, wherein the one or more filter sections are
2 biquadratic filter sections.

1 12. (original) The invention of claim 1, wherein the one or more filter sections are
2 connected to form a ladder structure.

1 13. (currently amended) A method for operating a filter having one or more filter sections,
2 wherein:

3 at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;
4 the method comprising:

5 applying power to the filter; and

6 configuring at least one of the gm cells itself to have substantially zero transconductance,
7 such that the at least one filter section will oscillate;

8 the at least one gm cell has switch circuitry connected to first and second input nodes of the at
9 least one gm cell;

10 the at least one gm cell is adapted to be configured to have non-zero transconductance by
11 selectively applying two different input signals to the first and second input nodes using the switch
12 circuitry; and

13 the at least one gm cell is configured to have substantially zero transconductance by selectively
14 applying a single input signal to the first and second input nodes using the switch circuitry.

1 14. (original) The invention of claim 13, wherein the at least one filter section oscillates at a
2 cutoff frequency of the filter section.

1 15. (currently amended) The invention of claim 13, wherein:

2 the at least one filter section has an input node that receives an input signal for the at least one
3 filter section, an intermediate node, and an output node that presents an output signal for the at least one
4 filter section;

5 the at least one filter section further comprises:

6 a first gm cell connected between the input node and the intermediate node;

7 a first capacitor connected between the intermediate node and a voltage reference;

8 a second gm cell connected between the intermediate node and the output node;

9 a second capacitor connected between the output node and the voltage reference;
10 a third gm cell connected at both ends to the intermediate node; and
11 a fourth gm cell connected between the output node and the intermediate node, wherein:
12 the at least one gm cell is the third gm cell; and
13 the third gm cell comprises a set of switches that enable the third gm cell to be
14 configured to have substantially zero transconductance, such that the at least one filter section will
15 oscillate.

1 16. (original) The invention of claim 13, wherein:
2 the at least one filter section is in a main signal path of the filter; and
3 the at least one filter section is configured to oscillate in order to tune the at least one filter
4 section.

1 17. (previously presented) The invention of claim 13, wherein:
2 the one or more filter sections comprise one or more main-path filter sections and a non-main-
3 path filter section;
4 the filter comprises a main signal path having the one or more main-path filter sections;
5 the at least one filter section is the non-main-path filter section, which is not part of the main
6 signal path;
7 the non-main-path filter section is a replica of at least one main-path filter section in the main
8 signal path; and
9 the non-main-path filter section is configured to oscillate in order to tune the at least one main-
10 path filter section in the main signal path.

1 18. (original) The invention of claim 13, wherein:
2 the at least one filter section comprises tuning circuitry that tunes the at least one filter section;
3 and
4 the tuning circuitry stores tuning control information for the at least one filter section such that
5 the at least one filter section can be tuned intermittently.

1 19. (original) The invention of claim 18, wherein information about the tuning of the at least
2 one filter section is used to tune one or more other filter sections in the filter.

1 20. (original) The invention of claim 13, wherein the at least one filter section oscillates
2 without relying on phase-locked loop circuitry.

1 21. (canceled)

1 22. (currently amended) The invention of claim [[21]] 1, wherein:
2 the two different input signals are a differential signal pair; and
3 the single input signal is a common-mode signal corresponding to the differential signal pair.

1 23. (canceled)

1 24. (currently amended) The invention of claim [[23]] 13, wherein:
2 the two different input signals are a differential signal pair; and
3 the single input signal is a common-mode signal corresponding to the differential signal pair.

1 25. (new) Circuitry comprising a filter having one or more filter sections, wherein:
2 at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;

3 at least one of the gm cells can be configured to have substantially zero transconductance, such
4 that the at least one filter section will oscillate;

5 the at least one filter section has an input node adapted to receive an input signal for the at least
6 one filter section, an intermediate node, and an output node adapted to present an output signal for the at
7 least one filter section and further comprises:

- 8 a first gm cell connected between the input node and the intermediate node;
- 9 a first capacitor connected between the intermediate node and a voltage reference;
- 10 a second gm cell connected between the intermediate node and the output node;
- 11 a second capacitor connected between the output node and the voltage reference;
- 12 a third gm cell connected at both ends to the intermediate node; and
- 13 a fourth gm cell connected between the output node and the intermediate node, wherein:
 - 14 the at least one gm cell is the third gm cell; and
 - 15 the third gm cell comprises a set of switches that enable the third gm cell to be

16 configured to have substantially zero transconductance, such that the at least one filter section will
17 oscillate.

1 26. (new) The invention of claim 25, wherein the voltage reference is ground.

1 27. (new) A method for operating a filter having one or more filter sections, wherein:
2 at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;
3 the method comprising:

- 4 applying power to the filter; and
- 5 configuring at least one of the gm cells to have substantially zero transconductance, such
6 that the at least one filter section will oscillate;
- 7 the at least one filter section has an input node that receives an input signal for the at least one
8 filter section, an intermediate node, and an output node that presents an output signal for the at least one
9 filter section; and

10 the at least one filter section further comprises:

- 11 a first gm cell connected between the input node and the intermediate node;
- 12 a first capacitor connected between the intermediate node and a voltage reference;
- 13 a second gm cell connected between the intermediate node and the output node;
- 14 a second capacitor connected between the output node and the voltage reference;
- 15 a third gm cell connected at both ends to the intermediate node; and
- 16 a fourth gm cell connected between the output node and the intermediate node, wherein:
 - 17 the at least one gm cell is the third gm cell; and
 - 18 the third gm cell comprises a set of switches that enable the third gm cell to be

19 configured to have substantially zero transconductance, such that the at least one filter section will
20 oscillate.

1 28. (new) A method for operating a filter having one or more filter sections, wherein:
2 at least one of the one or more filter sections comprises a plurality of transconductor (gm) cells;
3 the method comprising:

- 4 applying power to the filter; and
- 5 configuring at least one of the gm cells to have substantially zero transconductance, such
6 that the at least one filter section will oscillate;
- 7 the at least one filter section comprises tuning circuitry that tunes the at least one filter section;
8 and
- 9 the tuning circuitry stores tuning control information for the at least one filter section such that
10 the at least one filter section can be tuned intermittently.

1 29. (new) The invention of claim 28, wherein information about the tuning of the at least
2 one filter section is used to tune one or more other filter sections in the filter.